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THE PRESENT CONDITION OF EXPLORATION.

THOSE readers who wish to follow the reports and news of explorations in distant lands may find some assistance in the following condensed statement concerning the more important recent expeditions in the uncivilized parts of the world. We here note those travellers who have lately completed their field-work, and returned home, and whose narratives are recently published or still awaited; those who are still in the field, from whom occasional reports are received, often only after a time of trying silence; and those who are now planning to enter new ground.

Arctic regions.—The situation of parties in the arctic regions at the beginning of 1883 is about as follows, as far as known. Of the *Jeannette* expedition, the remainder of the original party were about to begin the homeward journey, together with ensign Hunt of the *Rodgers*. At last accounts they were *en route* from Irkutsk to Orenburg. Messrs. Harber and Schutze of the navy were expected at Irkutsk, in April, with the remains of DeLong and his party, intending to start for home as soon as the caskets arrived. A bill has been introduced into Congress to pension Mrs. DeLong; and another to indemnify those who lost personal effects on the arctic expedition of the *Rodgers*, and to reward the friendly natives who preserved the lives of the party during the winter after the burning of the ship. Mr. Leigh Smith of the *Eira* expedition has presented the Geographical society of London with £1,000, in recognition of its interest in arctic work. The arctic exploring vessel *Dimfna*, commanded by Lieut. Hovgaard of Nordenskiöld's party, bound for Cape Cheliuskin or Franz Josef Land, was beset in the Kara Sea, near Kara Strait, in the latter part of August. Several propositions have been made to organize an expedition for the purpose of communicating with her and with the Dutch international meteorological party on the *Varna*, also impeded by ice in the same vicinity. As nearly as can be judged from rather confused telegrams which have been received, no relief-party has actually been organized; though correspondence between the Danish and Dutch authorities has taken place, and the Danish captain Normann has visited St. Petersburg on that business. It has been reported that Larssen, one of the *Jeannette* survivors, had been engaged to make the attempt; and the last news appears to be, that nomads from the Petschora river-mouth report

that the vessel was in good order, and had arrived from the coast of Novaia Zemlia to remain for the winter.

The situation at the international polar stations for simultaneous meteorological and magnetic observations was favorable when last heard from, except in the case of the Novaia Zemlia parties. The American station at Lady Franklin Bay, the most northern and the first-established of all, has not been communicated with, owing to ice in the northern part of Smith Sound; but, being fully provisioned and equipped for three years, the party are believed to be in good condition. The German station at Kingava, Cumberland Inlet, was successfully established in the autumn of 1882, under Dr. William Giese. Observations are in progress at Godhaab, in West Greenland, under Lieut. Paulsen's direction. Dr. Snellen in the *Varna*, with the Dutch expedition which aimed at reaching Dickson Haven, near the mouth of the Yenisei, reported beset in the Kara Sea, near Kara Strait, in the last week in August, will doubtless have established a station on the land of Novaia Zemlia if not released by the end of the season. With or near them was the Danish arctic expedition, on the steamer *Dimfna*, commanded by Lieut. Andreas Hovgaard, mentioned above. The Austrian expedition, commanded by Lieut. E. v. Wohlgemuth, succeeded in establishing its station by Aug. 15, on the island of Jan Mayen, in a ravine on the southern slope of the Vogelberg, named Wilczek valley, after the promoter of the expedition. The latest data from the Russian expedition to make a station at the mouth of the Lena was, that all was progressing favorably, and that the party, under the command of Lieut. Juergens, had reached its destination. Of the subsidiary station, projected by the imperial geographical society at Moller Bay, under the direction of Lieut. Andréieff, no positive news has been received here; but it is asserted that they had reached and would winter in Novaia Zemlia. The Finnish station on the shores of the White Sea began operations Aug. 15. Mahlenberg, with the Swedish expedition, were safely established at Wyde Bay, Spitzbergen; while the observations of Steen, at Bosekop, near the North Cape of Norway, have been going on quietly for some time. Capt. Dawson with his party were well on their way toward Fort Rae, in the Hudson Bay territory, when last heard from. The exact locality finally decided upon by the Anglo-Canadian party is not yet known. The U. S. party at U'gla-ámi, near Point Barrow, Alaska, were visited and recruited during the

summer, and the first year's observations are already in the computer's hands; while the simultaneous observations by self-registering instruments under the direction of Mr. Marcus Baker of the U. S. coast-survey, at Los Angeles, Cal., are progressing favorably, and will be steadily maintained. Of the proposed subordinate stations at York Factory and in Labrador, no recent information is at hand, though Dr. Koch, charged with organizing the latter, is stated to have reached Labrador in August.

In the antarctic, parties are believed to be already at work on South Georgia and the Falkland Islands; but details in regard to these stations are not yet received. The French station at Orange Bay, Tierra del Fuego, made a successful beginning of operations Sept. 6.

Alaska.—Little was doing in Alaska at latest advices. A prospector named Bennett, with a small well-armed party provisioned for fifteen months, had entered the valley of the Atna or Copper river to search for minerals. Edward Schieffelin, with his party and steam-launch, reached the junction of the Yukon and Tananah rivers during the summer, and were reported in good condition and spirits, intending to ascend the Tananah and search for gold. After the ordinary means of communication were closed for the season, it appears that discoveries of such importance were made that it justified the expedition of a special courier overland to carry the news to others interested in the venture. The route and details of the journey are not stated; but a letter, apparently authentic, and stated to have been so sent, has been published in the Californian papers, indicating that they had found very rich placers.

The U. S. coast-survey steamer *Hassler* has arrived in San Francisco, after six months' work in Alaska, having made important surveys, and is expected to return to the field in April. Valuable collections were made for the national museum during the voyage. Miners whose movements are not made public are pushing private explorations in many parts of the territory. From the small mining-camp of Juneau, the express companies note the receipt of \$240,000 in gold-dust in 1882, against \$13,000 in 1881. Capital, which alone can test the permanent value of these discoveries, patiently waits for the long-deferred extension of law and authority over the country by Congress.

South America.—The interior of British Guiana has lately been visited by H. Whitely, who passed near the celebrated mountain Roraima; and by M. McTurk, who travelled up the Cuyuni river toward the Venezuelan fron-

tier. In the valley of the Amazon, R. Payer, brother of the Arctic explorer, was last reported on the Rio Negro, aiming for the Orinoco. J. B. Minchin has executed surveys of the Andean tableland south of Lake Titicaca for the Bolivian government, of which some account has been published; and J. Ball has followed Whymper in visiting the Andes for mountaineering. Dr. Crevaux, who left Buenos Aires Nov. 20, 1881, to ascend the Rio Pilcomayo, was killed there by the Indians in April of last year; but little has been learned of his expedition, and Fontana left Buenos Aires July 4, to search for the remains of the unfortunate party. It is reported that Lieut. Guierre, of the French marine, has undertaken a similar expedition. R. Lista, already successful in Patagonian exploration, is engaged on a journey from Bahia Blanca westward to the Andes, thence southward to Punta Arenas on the Straits of Magellan; and a government commission is occupied with the survey of northern Patagonia, to parcel the land for sale to colonists. Lieut. Bove of the Italian antarctic expedition was wrecked on Tierra del Fuego May 31; his vessel was lost, but the members of the party were rescued by an English vessel. The German south polar expedition was safely left on South Georgia Sept. 3; and the French expedition arrived at Tierra del Fuego on Sept. 6. The several astronomical parties sent to southern South America to observe the transit of Venus will probably return with new geographic observations as well; Steinmann, of one of the German parties, intends making an extended tour through Chili and Bolivia before coming back.

Asia.—The Russians continue an active exploration of their vast dominions. Besides extended surveys in the better-known parts of their country, Elisseeff has been examining Russian Lapland, Ivanitzky has been sent to the Petchora, Malakoff to the Ural, and Walter to Eastern Russia; Poliakoff has recently returned from the island Sakhalin, and Regel is still in the Pamir; surveys are carried on in Caucasia, and along the Persian boundary, where Lessar's recent studies have received much attention. It is proposed to send Preielski, who has so successfully penetrated central Asia, back to the Tian Shan in March, to study its reported volcanic districts. Capus and Bonvalot, leaders of a French scientific party, have returned from Bokhara; and O'Donovan, an English correspondent, has come safely out of Merv with an interesting experience. Exploration in Asia Minor is largely archeological, and engages Humann,

Hirschfeldt, Fester, and Puchstein, who are aided by funds from Berlin, and Clarke, of our own Assos expedition; and parties from Vienna and from England will probably soon take the field, the latter under Conder to be fitted out by the British association for a survey of eastern Palestine. S. Langer, a young German, who had for some time been studying Arabic in preparation for an inland journey, was killed in southern Arabia last June.

Colquhoun and Wahab have safely finished a journey across country from Canton to Rangoon, where they arrived last July; the latter unhappily died on his way to England. The French are sending many parties into Indo-China, a field that few other nations attempt; Garanger has gone to upper Burma; Villeroi d'Angis has returned from Tonquin, but his companion, Courtin, died in the interior; Harmand has entered Siam; Néis, Aymonnier, Septans and Mondon, and Gautier, have gone to Cambodia and Cochin China, the latter expecting to make an extended journey. C. Bock, known for his travels in Borneo, returned to Bangkok from a trip in upper Siam last June. Riebeck had a successful ethnological tour in northern India, and has gone to Batavia; he will return to Europe by way of this country.

Africa receives the lion's share of modern exploration, and largely with a view to commercial advantage. The French continue their energetic work in Senegambia. Col. Berguis-Desbordes, who was last year in command of a French government party on the upper Senegal, is to return with a strong force to the country between the Senegal and the Niger. A large railway corps under Jacquier will follow him. Dr. Bayol left Bordeaux last October for the Futa-Djallon highlands, and Caquereau was recently preparing a scientific and commercial expedition for the same region. Capt. Burton and commander Cameron returned last summer from the Gold Coast, where they had been to look into the chances of mining. A Russian expedition under Rogozinski, and an Italian under Bianchi and Licata, have been planned to enter the country at the Bight of Biafra. The latter will be absent several years, intending to cross the continent, passing through the unknown region between the Kongo, the Benue, and Lake Tchad, and finally reaching Abyssinia. No full report has yet been made on a similar long journey, but in the opposite direction, by Matteucci and Masari, on the return from which the former unfortunately died in London, August, 1881. Savorgnan de Brazza and Stanley have re-

turned from their expeditions on the lower Kongo; Brazza reaching Europe last June, and Stanley in October. They have unhappily come back with little good-will for each other; and it would seem from the reports of their journeys, so far as yet published, that Brazza has been over-ambitious in his designs. Both are to return for further exploration. In addition to the trading-stations planted on the lower Kongo, several missions have established themselves there, and will probably contribute to our knowledge of the geography of the region. Bentley, Comber, and Grenfell, of the Baptist missionary society, have reached Manyanga and Stanley Pool; Clarke, Richards, Ingham, and Sims, of the Livingston (Kongo) mission, are established at Stanley Pool, and have two small steamboats for journeys up the river; L. Petit, a naturalist who has been along the Loango coast, is going up the Kongo; and Cambier, of the International African association, left Zanzibar last May, with two hundred men, for the Kongo *via* the Cape.

From the Egyptian Sudan, Emin-Bey and Lupton-Bey report on their explorations. Among the Italian explorers are Cecchi, lately returned from southern Abyssinia; Count Antonelli, who was to begin his work at the Italian colony Assab, on the Red Sea; P. Sacconi, to establish a trading-station at Harar, southwest of the head of the Gulf of Aden; and Capt. Casati, whom Dr. Junker has met on the Uelle. The latter is still in this little-known region, attempting to solve the problem of its drainage. The German African association at present has several exploring parties at work: Flegel, aiming at Adamaua, with hope of reaching the unknown country beyond between the Benue, Shari, and Kongo; Pogge and Wissmann, who entered from the west coast, and reached the upper waters of the Kongo, where they parted,—Pogge to return westward, and Wissmann to go on eastward to Zanzibar, where he safely arrived last November; and Stecker, who had been with Rohlf's in Abyssinia about Lake Tana, and who then attempted to go southward through the Galla lands to the coast. There is also a German expedition under Böhm, Kaiser, and Reichard, at Kakoma in Ugunda, and a Belgian station at Karema, where Storms has gone to relieve Becker; Dr. G. A. Fischer was to enter eastern Africa from Pangani last November, with an expedition fitted out by the Hamburg geographical society; he hopes to reach Victoria Nyanza, and then turn northward. The appropriation of 100,000 marks by the German Reichstag for African exploration is recently

announced. J. M. Schuwer is south-west of Abyssinia, about the head-waters of the Blue Nile. Aubrey and Hamon, Révoil and Soleillet, are French explorers working inward from the Red Sea.

English exploration in the lake region is to be renewed under Joseph Thomson, who is sent by the Royal geographical society to explore Mounts Kenia and Kilimandjaro and the country beyond them. H. E. O'Neill, British consul at Mozambique, has lately undertaken several inland expeditions, and will be probably heard from again. Johnson, of the Universities mission, has recently shown that the Ludjende branch of the Rovuma heads in a lake supposed to correspond to Livingston's Shirwa. Many other missions have stations in the lake region. James Stewart has been sent to construct a road between Lakes Nyassa and Tanganyika. He had a steamer on the former, and has executed a survey of it.

A. Raffray, who had explored part of Abyssinia while French consul at Massaua, has been sent as consul to Tamatave on the eastern coast of Madagascar, where he will probably continue his geographic studies; Paiva de Andrada, with a company of experts, has examined the mineral riches of the lower Zambesi, but no full reports are yet made public; Giraud left Marseilles for Zanzibar last July, hoping to penetrate to Bangweolo lake and then west to the Atlantic; Cardoso and Franco left Mozambique in September last, to enter Umzeila's country; and Dr. Holub intends to return to south Africa early this year, prepared for a journey from the Cape to the Zambesi.

Australasia. — The government of West Australia has sent an expedition, under J. Forrest, to the north-western coast to institute surveys, as he had found valuable agricultural lands there in a previous trip. Michlucho-MacLay, who has spent a year in Europe after his long stay in New Guinea, returns to Sydney to continue zoölogical studies there. While in Europe, he received £2,200 from the emperor of Russia toward the publication of his previous explorations. Last March the Rev. W. S. Green accomplished the ascent of Mount Cook, the highest of the New Zealand Alps, with the aid of two Swiss guides. He proposed to attempt a similar excursion in New Guinea. Dr. Finch has returned from ethnological studies in Australasia and Oceanica. Schadenberg, Meyer, and Landau have been in the Philippines; and the latter goes to Japan. H. de Vésine, Larue, and M. Geny have undertaken an expedition in Sumatra.

As the reports and results of these various explorers are published, it is our hope to present an outline of them to the readers of SCIENCE.

THE WEATHER IN DECEMBER, 1882.

THE monthly weather-review of the U. S. signal-service for December, 1882, shows that the meteorology of the month was of unusual interest. The following may be mentioned as the prominent characteristics:—

The temperature was below the mean in all districts east of the Rocky Mountains, except in the lower Missouri valley, and above the mean from these mountains to the Pacific. The lowest temperature noted was -35° , in Dakota; and the highest, 95° , in Arizona. The cold was unusual in the southern states, there being frosts as far south as central Florida. The special frost warnings were of great value to the sugar and fruit growers in this section.

The rainfall reports, which were received from over five hundred stations, show in general a deficiency; but there was a marked excess in the northern Pacific district, causing floods in Oregon and Washington Territory. Snow in California on the 12th, causing considerable damage to the evergreen foliage, was the special feature of the precipitation record.

The average pressure was normal; but the depressions, as is usual in December, were well marked, ten being charted. Of these, one was observed from the Pacific to the Atlantic, and across the ocean to the English coast; one was formed by the union of two centres; while two presented the unusual phenomenon of separating each into two distinct centres, which afterwards re-united. Five of the depressions pursued an easterly track, and four a north-easterly. Four of the areas were traced completely across the Atlantic.

The wind velocities were often high; the greatest recorded being 116 miles an hour, at Mount Washington. Velocities of 70 miles were noted on the coast of North Carolina. The following 'total movements of the wind' in miles deserve note: Mount Washington, 23,411; Cape May, 12,901; Pike's Peak, 12,548; Hatteras, 12,279. The velocities at Mount Washington invariably exceed those of any other station, month after month; while those at Pike's Peak are smaller, though the elevation of the station is more than twice as great. In this month the velocity at Cape May, on the coast, exceeded that at Pike's Peak, over 14,000 feet in altitude.

Auroras were frequently noted, but none